

More or Less?

Methods to Compare VA and Non-VA Health Care Costs

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OBJECTIVE. To examine past comparisons of the costs of the Veterans Health Administration (VA) and of non-VA providers to determine lessons and data requirements for future cost comparisons, particularly those assessing VA efficiency and to determine whether VA should purchase care from non-VA providers.

CONCEPTUAL FRAMEWORK. Over the past two decades, researchers have tried to establish how VA costs compare to those of non-VA health care delivery systems. Existing studies of overall acute care costs address one of two distinct questions: How do VA costs compare to costs in private sector hospitals? and Would it cost more to have VA patients treated in nonfederal hospitals? For both questions, the major factors underlying differences in health care costs are variations in outputs, input prices, and levels of efficiency. Health care cost comparisons across

systems must also wrestle with accounting differences.

CONCLUSIONS. That review finds no convincing evidence that VA has been significantly more or less efficient than nonfederal hospitals in delivering care. However, VA costs do appear to have been significantly lower than fee-for-service charges that the federal government might have to pay if veterans were treated in private sector hospitals for the same diagnoses. Future comparisons of costs in the era of managed care will require better diagnostic and population data to control for observable and unobservable case-mix differences. They should also include measures of the quality of outcomes. Finally, consistent accounting practices, particularly in the treatment of capital costs, are needed.

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The Veterans Health Administration (VA) is currently restructuring the way it provides health care to improve the continuity of care that veterans receive within its system.¹ Despite serving an increasingly older veteran population,² VA has shifted care in the 1990s from inpatient to outpatient settings and has shortened the average length of acute hospital stays.

For example, the number of acute and intermediate inpatient stays have fallen more than 15% in the last 2 years from over 700,000 in fiscal year 1996 to 607,000 in fiscal year 1998.³ In the same period, outpatient visits have almost doubled from just over 30 million to roughly 55 million. Those changes have been achieved under the financial pressure of a level-funded

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national VA budget and under the urging of Congress to move toward managed care.

VA restructuring follows a period of major change in the US health care system at large. Public accountability requires VA to re-examine its costs relative to those in the nonfederal system. The two most important policy questions are as follows: Could care be provided to veterans at less cost by paying for it in the non-VA delivery system? and Could VA provide care more efficiently than it presently does? In determining the methods and data needed to address those questions in the present era, past comparisons of VA and non-VA costs can provide important insights.

Over the last 2 decades, more than a dozen studies have systematically compared VA costs to those in the nonfederal sector. This paper reviews the methodological issues and solutions applied in past studies in an effort to highlight the information necessary to improve our understanding of VA costs.

Our key conclusions are as follows. First, cost comparisons require a clear definition of the policy question of interest. Asking whether it is more efficient for VA to make or to buy health care implies one type of analysis; the question "Could VA provide the same care more efficiently than the private sector?" requires another. Second, to compare VA and non-VA costs directly, researchers must address both observable and unobservable case-mix differences to show the extent to which patient populations differ and whether the differences affect resource use. Third, differences in quality of outcomes, conditional on case-mix severity, must also be addressed directly. Finally, capital costs must be treated in a careful and consistent manner, with comparisons based on more than one method of estimation to ensure robust conclusions.

Conceptual Framework

Cost comparisons are relevant to both policy questions. The question of whether to pay for veterans' care in the non-VA system appears to relate VA costs only with non-VA prices, but prices must, on average, equal nonfederal costs plus markups. Variations in market factors can lead to prices that are higher or lower than the average. It is even possible for non-VA prices to be lower than costs, at least in the short run. For example, providers who seek entry to a market may bid very low for initial contracts. VA make or buy decisions should begin with price-cost

comparisons, but should also consider underlying non-VA costs that could raise future prices if VA chose to buy the services.

Economic theories of hospital behavior suggest three major factors that underlie cost variations from one provider to another: different outputs; different input prices; and different levels of efficiency.⁴⁻⁷ Within the health care industry, each of those factors presents its own challenges for the researcher. In addition, comparisons across health care systems may need to correct for variations because of different accounting practices. That difference is especially relevant for facilities providing long-term, as well as acute, care and for the treatment of capital costs by government compared with private sector facilities.

Capturing output differences is difficult for health care studies for several reasons. First, patients' medical conditions can vary significantly with respect to diagnoses and severity and can require markedly different treatments. Second, patients' nonmedical characteristics (eg, literacy or educational level) affect their ability to comply with medical directions or participate in their own care. Health care professionals may be mindful of those attributes in cases in which they choose treatment. Hospitals serving a disproportionate share of low-income or Medicaid patients receive a higher prospective payment from Medicare in recognition of higher treatment costs associated with servicing that population,⁸ such as the use of translators and social workers to help with non-medical problems, which can affect health care costs. Finally, treatment can also differ in quality or outcomes in many dimensions, conditional on patient characteristics.⁹ Regardless of which policy question an analysis addresses, differences in outputs must be held constant.

Input prices include wages (which may vary because of a hospital's urban or rural location or because of federal wage schedules), the prices of medical supplies, and the costs of capital. Depending on the question at hand, analysts may not control for those differences. If the policy question is, "Could care be provided to veterans at less cost by paying for it in the non-VA system?" the analysis should not hold the input prices constant. If VA provides care at a less cost because its capital or pharmaceutical costs are lower, that is a legitimate reason; on the other hand, if the analysis seeks to determine the relative efficiency of the VA system in providing care, it should control for geographic price differences.

Health care “efficiency” can refer to the following: technical efficiency (operating on the production frontier with no redundant labor, equipment, or supplies to produce a service); technological efficiency (using the dominant or least expensive process to perform a task, including the choice of the locus of care on an inpatient or outpatient basis); and economic efficiency (using equipment and people in proportions which minimize costs, given their relative prices). Studies comparing VA and non-VA costs concentrate on the last type of efficiency, cost minimization, primarily in acute-care settings. The question implicit in all of the comparisons is whether the lack of financial incentives to control costs in VA have led it to be more costly than non-VA providers or than the cost of services purchased from non-VA providers.

Methods

This paper builds on an earlier review and annotated bibliography.^{10–11} The earlier literature search, which used Medline and Econlit to generate a list of publications comparing costs at any level, was updated and includes relevant VA public reports. Six studies have compared overall hospital costs between VA and the private sector, and another seven have compared specific aspects of VA costs to the non-VA sector.

Of the overall cost studies, four addressed the question, “How do VA costs compare to those of private sector hospitals?” The other two tried to answer a different question, as follows: “Would it cost more to have VA patients treated in nonfederal hospitals?” In all six studies, VA compares relatively favorably with the private sector in terms of hospital costs, but methodological problems in measuring costs, input prices, hospital output, and patient characteristics make those analyses less than definitive.

The next three sections are organized according to the underlying research questions addressed in the studies. The last section discusses the overall implications and suggests the path that future studies will have to take in comparing VA with non-VA providers.

How Do VA Costs Compare With Those of Private Sector Hospitals?

Since the 1970s, cost comparisons have recognized that VA patients differ significantly from those in other systems but lack of data hampered the

earliest studies. For example, Hornbrook¹² found that costs per patient in the VA rose more slowly during the late 1960s and 1970s than did private sector costs but noted that differences in the patient populations make direct comparisons invalid. He did not explore the degree to which the rates of increase in costs were also not comparable because of changes in the characteristics of the patients treated in the two sectors. The expansion of non-VA health care for both the elderly and the poor during the decade from 1965 to 1975 may have changed the composition and care provided in the nonfederal health care sector more rapidly than for VA.

Matson¹³ acknowledged the difficulties in comparing costs per patient day and per inpatient admission from VA's 1979 annual report to nonfederal health care costs. After adjusting for the inclusion of physician costs and the exclusion of capital costs in VA, the inclusion of outpatient costs in the private sector figures, and differences in populations, Matson reported adjusted costs of \$2,450 per VA inpatient episode as compared with \$2,622 for all community hospitals. The methodology for making the figures “as comparable as possible” is not explained and cannot be evaluated, however.

Adelman¹⁴ compared cost estimates for medical and surgical acute-care episodes in VA medical centers and community hospitals affiliated with medical schools (a choice that biased the private sector cost estimates upward). For a set of patients matched on cost-related factors such as age, diagnosis, the presence of multiple diagnoses, and having surgery, the study estimated VA per diems from fiscal year 1980 budgets and based nonfederal per diems on the American Hospital Association's annual survey. The study decreased community per diems by 3.2% to remove higher costs for administering a fee-basis program and raised VA budgeted costs to reflect indirect costs for maintenance, administration, research education, and malpractice expenses. Conclusions were sensitive to the subset of private hospitals used in the comparison: VA was 15.1% to 19.4% less expensive, depending on whether or not the comparison hospitals offered a similar set of services (an inadequate attempt to control for different outputs). In addition, VA did not have patient-specific cost accounting in 1980, so the VA per diems are necessarily based on annual budget averages for specific bedsections.

VA's Office of the Inspector General (OIG) compared two outcome measures as well as costs of care.¹⁵ That 1992 study examined 15 VA medical centers (of 128) and their state university affiliation hospitals (which were included only if they had a patient population that was judged to be similar to the paired VA hospital, overlapping medical staff, residency programs of similar size, and similar technology in at least a few areas). The analysts concluded that the VA medical centers operated with approximately 60% of the costs of their matched affiliates with similar outcomes in terms of mortality of males over age 65 and deaths from prostate disease.

The study controlled for factors such as hospital location, input prices, physician employment, and technology, but it did not adjust for case-mix differences. The authors argue that pairing VA and non-VA facilities controlled for "generally similar clinical populations," but that this pairing of tertiary facilities in the two systems inadequately controls for differences between VA users and general health care populations in terms of gender, age, multiple co-morbidities, income, and socio-demographic factors. In addition, the approach necessarily made the results nongeneralizable to VA/non-VA comparisons as a whole.

The OIG used weighted work units (inpatient days plus outpatient visits divided by four) to control for the mix of inpatients and outpatients. Generally, we would expect sicker patients to receive more weighted work units (longer lengths of stay). However, because the VA lengths of stay are longer for apparently similar patients,¹⁶ that approach biased the cost comparisons in favor of the VA by making it appear more productive.

Management Science Group's study of costs from 1984 to 1992 attempts to control for the most cost factors in comparing expenditures of VA medical facilities and nonfederal hospitals.¹⁷ Costs for nonfederal hospitals came from files of the American Hospital Association (AHA) and the Health Care Financing Administration (HCFA). VA financial information for the VA's 136 nonpsychiatric inpatient facilities came from the cost distribution report (CDR) but was adjusted to exclude various costs (eg, physicians' salaries) which were not included in the nonfederal data and to redistribute other specific costs.

The authors computed annual VA case-mix indexes for each VA medical center, based on the over-65 population and using HCFA methodology, to match the indexes available from HCFA for the

nonfederal facilities. The study's conclusions were that the adjusted VA expenditure per discharge went from being 16% higher in 1984 to 5% lower in 1992. It found that VA inpatients had a lower case-mix complexity on average (based on DRGs) and significantly longer lengths of stay than nonfederal hospital patients. The adjusted expenditure per inpatient day ranged from less than 50% in the early 1980s to 60% to 65% in the 1990s.

This study is the only VA/non-VA cost comparison to estimate VA capital costs beyond including depreciation. Capital investment for VA facilities was calculated by summing expenditures for all equipment with a unit cost greater than \$300 (from the Equipment File); expenditures for construction projects (assigned from the Centralized Accounting System for Construction Appropriations or the report "Accrued Expenditures by VA Facility Within State"); and expenditures from the cost centers for recurring and nonrecurring maintenance, building equipment, and other improvements.¹⁸

Although it improved upon the earlier studies' methods, the study was unable to find a better source of total VA medical center costs than that used in earlier studies: the VA's cost distribution report (CDR). As a budget tool, the CDR is not standardized across medical centers. Budgeted amounts are arbitrarily assigned to one of eight categories by managers who often do not have good information on which to base their estimates of the distribution of employees' time. Data for private sector facilities have similar limitations, but are often not as organizationally complex as VA medical centers. Medicare cost reports and many other private sector financial reports (but not hospital survey data) are regularly audited; VA CDRs are not.

Would It Cost More to Have VA Patients Treated in Nonfederal Hospitals?

Two other studies compared VA costs with estimates of what it would cost VA to send its patients to the private sector for care. In the first of those, O'Connor¹⁹ concluded that VA inpatient care would cost about 10% more in non-VA facilities, but that facilities had budgetary incentives to report lower acute hospital care costs and shift budgeted amounts to other medical center departments during the study period, the first half of fiscal year 1977. O'Connor tried to exclude VA

costs that would not have been incurred in the private sector and to attribute costs of overhead, malpractice insurance, and depreciation to VA facilities when, in fact, they do not include them in budgets. The study also tried to adjust for patient acuity by hospital group.

VA's purchase price for community inpatient medical and surgical care was the estimate for VA's nonfederal hospital costs, which is an imprecise measure given the low volume and nature of care purchased by VA in the private sector. Those services have tended to be acute stays for veterans who live at a distance from a VA medical center or for services which are not provided by the veteran's medical center. The study computed physician charges from data on total physician charges for medical and surgical care in a special survey of Medicare enrollees for calendar year 1975 (inflated to fiscal year 1977) and on information from the Commission of Professional and Hospital Activities apportioning the total number of episodes of care between medical and surgical stays. VA total charges for medical and surgical inpatient services were the cost allocations for the medical and surgical bed units, which was adjusted for administrative, engineering, management, research, education, and depreciation.

The study did not control for differences in input prices associated with the location of the VA facilities. Rather than compare VA to a national average, it should have weighted the costs in the private sector to reflect either of the following: (1) hospitals in the same locations as the VA hospitals or (2) hospitals in areas in which VA clients lived. Further, the study did not correct for differences in the patient populations other than age, sex, and race. The patients could be more or less severely ill, on average, than those treated in the private sector.

Graham²⁰ also estimated how much VA might have had to pay for private sector hospital care (omitting physicians) for its inpatients in 1984. VA costs were based on cost-distribution data and included direct medical education costs, indirect expenses, resident stipends, and 11.4% for unfunded capital expenses. Graham used six different non-VA databases for her cost comparisons, including all PPS facilities' charges and reimbursements, Medicaid charges, and costs for hospitals in Maryland. Whereas none of those estimates is directly comparable with VA budgets, they undoubtedly bracket VA costs and lend credibility to the conclusions.

Graham concluded that VA provides inpatient acute care at a somewhat lower cost than would be paid for the same patients in the private sector unless very stringent payment regulations were used (as in some state Medicaid programs). However, there is no measure of outcomes or quality of care between VA and non-VA systems, and we might conclude that VA's value for money is much greater or much less if we could ascertain the differences in this area.

Compared with the earlier reports, Graham had the advantage of being able to use DRG categories, rather than lengths of stay, to account for case-mix differences; however, VA diagnostic coding was (and still is) open to the criticism that it does not capture the same degree of diagnoses and procedures coded in private sector facilities. The private sector costs of treating the patients in each DRG were calculated in several ways, including Medicaid charges, California Health Facility Commission charges, Maryland's hospital costs, and Medicare's national average reimbursement.

The study did not consider the decision to admit patients as opposed to treating them on an outpatient basis. In 1984, the VA budget system may have provided incentives for inpatient, as opposed to outpatient, care which is an incentive that is countered for Medicare in the private sector by the monitoring under peer-review organizations. Indeed, Winickoff, Fischer, and August²¹ found that there may be a large proportion of inappropriate admissions to VA medical centers, particularly for stays of 2 days or less. If Medicare were, indeed, more efficient at treating patients in the most appropriate locus of care, that could have offset some or all of the higher prices for inpatient care and made the system, as a whole, more efficient than the VA.

Graham may also bias her VA inpatient cost estimates downward by allocating too large a share of costs to outpatient care. Reilly and Reilly²² make a similar attempt to estimate outpatient costs, and Jameson et al,²³ discuss several methodological issues related to allocating outpatient supplies and services on an average basis.

How Do Specific VA and Non-VA Costs and Cost Factors Compare?

A number of other reports provide comparisons of the costs or cost factors of specific hospital services or report-cost figures that might be helpful to

other researchers attempting to compare VA with nonfederal health care providers. However, none of those studies supports a generalizable conclusion about overall hospital costs between the two types of hospitals. They address questions of specific technical efficiencies (ie, reasons for differences in lengths of stay, costs of EKGs and CTs, and outpatient and nursing home care) within the VA hospital system and are necessarily too limited to answer questions of overall efficiency. Further, they often describe hospital practices, especially within VA, that are outdated given changes in the 1990s.

Eastaugh¹⁶ paired 258 VA patients, having one of three surgical procedures, with nonfederal hospital patients undergoing the same surgeries. The basic objective of the study was to identify the determinants of excessive lengths of stay using characteristics of the medical staff, the facility, and the patients. Dollar values were not available, but length of stay is a prime predictor of acute care costs.

Federal ownership, hospitals' teaching activities in surgery, and laboratory turnaround times were correlated with longer preoperative lengths of stay and were consistently significant at the 5% confidence level. Occupancy rates were correlated with shorter preoperative LOS. However, the impact of all of those factors was greatly reduced in statistically explaining total lengths of stay and the occupancy rate was not consistently significant.

What would, perhaps, be of most value to managers and policy makers would be a study that evaluated the contribution of staff, facility, and patient characteristics to the average length of stay at both VA and non-VA hospitals. For example, if the regression coefficients were evaluated at the mean, the study could show whether VA stays are a half day longer because their patients are older or are a quarter of a day longer because of secondary diagnoses. Such a description would begin to pin down some of the reasons for the longer stays in VA facilities that have been observed consistently since the 1970s in a wide variety of studies.

The other major study of lengths of stay is by Rosenheck, Massari, and Astrachan.²⁴ Those studies examined only psychiatric and substance abuse discharges and their findings are consistent with other studies: average stays in VA facilities are longer as compared with private psychiatric and general hospitals. In three separate years, state and county hospitals had the longest average stays

(around 120 days), but those facilities handle long-term cases and, thus, the patient populations are not comparable with those treated in acute-care facilities. Insurance coverage also plays a role in keeping nonfederal lengths of stay shorter (around 35 days compared with over 45 in the VA) because most private sector insurance policies place strict limits on treatment for both mental health and substance abuse (rarely more than 2 30-day treatments in a lifetime).

Two other studies are useful because they present estimates of the costs of specific services in VA and military or community hospitals. Brown and Luchi²⁵ compared the costs of EKGs in 1977 in VA, military, and community hospitals and found that VA had markedly lower costs. The methodologies for the private sector costs were not explained, however, and may have included capital costs and profit markups that are not present in the VA costs. Lindberg et al,²⁶ compared costs of emergency room care in a New Mexico regional medical center. Whereas VA and military patients shared equally in the consumption of medical supplies, VA patients were more costly in the emergency room and less costly in the center's clinic. The authors found that much of the differences in costs could be explained by observable patient population characteristics.

Elixhauser et al,²⁷ compare dollar estimates for CT scans within VA to those obtained on a fixed-fee basis. VA costs were indeed lower than the fixed fee, but the latter undoubtedly included capital costs and a marginal markup that made it unsuitable for a cost comparison. The higher private charges in those comparisons do not mean that VA is more efficient in providing care but could indicate how much the federal government may save by not having to pay the private sector mark ups. That saving could possibly justify a system even if it were somewhat inefficient in the actual delivery of care (which has not been demonstrated in any of those studies).

Reilly and Reilly²² used accounting data to examine outpatient costs across VA clinics, for both an individual visit and on an annual basis. The major cost category for a physician visit was salaries, with nonphysician salaries costing twice as much as those for doctors. The cost per visit ranged from \$32.66 (1976 dollars) for the hypertension clinic to \$243.38 for hematology. The study's methods failed to solve two major methodological problems that face any cost accounting system: (1) apportioning the costs of supplies and

equipment (pro-rated here in direct proportion to personnel costs)²³; and (2) substantiating physicians' clinic time.²⁸

The main objective of the report by Prashker et al.²⁹ was to examine the reasons for the observed two-fold difference in national mean per diem costs between VA nursing home care units (based on the CDR) and community contract nursing homes (based on the VA's contracted payment rates). The study found that the VA provided some additional care to the community-based patients that reduced the per diem difference and that the mean case-mix index for VA nursing home patients was 33% higher (perhaps justifying the VA's use of 19% more nursing personnel per patient). A station-level examination of the CDRs found that it was an inappropriate source of cost information on which to base policy decisions, because accounting practices for assignments of personnel and all other costs leads to both under- and over-allocation of budgets to the various patient service centers.

Lessons for Future Cost Comparisons

None of the above studies definitively establishes the comparative cost or efficiency of VA medical centers compared with non-VA facilities; this underscores the difficulty in comparing systems with markedly different populations and organizational features. Further, by taking the VA's budget documents as the starting point for determining costs of care in VA, all are vulnerable to inconsistencies in VA's cost accounting system across time and medical centers.

VA economic research requires two types of studies to inform current policy. The first would address the question that is now the most relevant if VA is to be responsible for managing the care of its veteran population: "What would be the capitated cost for private sector institutions to provide the same spectrum of services to the same populations of veterans now served by VA at a comparable level of quality and access?" Regardless of the answer to that first question, the second type of study would compare information on ways to improve VA's overall competitive position with the private sector. Those studies would compare incremental costs within VA with best estimates of non-VA costs and reimbursements for specific types of services, allowing VA to improve its provision of care through selective "make or buy"

decisions and the selection adoption of non-VA best practices. In studying costs for make or buy decisions, VA researchers must explore the relationship of marginal to average costs for the programs in question. A long-run perspective is also necessary to assess what changes in joint costs would result from adding or dropping services or programs. Such a perspective would include capital costs, not only depreciation expenses but also the opportunity cost represented by the interest on the undepreciated capital expenditure for each year.

Such studies would first require a rigorous audit of the VA budget data to ascertain appropriate allocations of the budget amounts for different hospital services (eg, inpatient versus outpatient, acute versus long term care units). The lack of a standardized system for attributing costs hinders the agency's ability to be publicly accountable. It also hampers managerial assessments of how to improve facilities' performance. If managers do not know what a service costs them, they cannot properly assess the effects of proposed changes. The need for standardizing cost accounting across facilities exists even for data systems which capture utilization and ascribes costs at the patient level or for service units, such as nursing homes, ambulatory clinics, etc. Cost standardization is as basic as having standardized information on patient diagnoses or the quality of care.

The VA research portfolio should include analyses that compare the costs of care for VA and non-VA providers for the following three units of analysis: (1) per user per annum (adjusting for non-VA health care use); (2) per disease episode; and (3) per service. The relative costs at one level do not imply the same relative outcome at another; a facility could have the lowest nursing home costs and the highest costs per surgical episode or the highest costs per user.

VA costs per user per annum also exclude the costs which those patients incur in other health care systems, such as Medicare. Comparisons would require merging Medicare and VA data and controlling for the degree to which VA patients rely on VA for their health care or controlling for veterans' health insurance coverage.

Cost studies should also begin to document the effect on costs resulting from differences in VA populations other than previously observed case-mix measures, such as inpatient and ambulatory diagnoses groups. That is, to gauge the capitated

cost for private sector care for veterans, the studies should explore the additional cost occasioned by serving a more poor and less educated population, conditional on case-mix measures and measures of outcomes. That research agenda will need new data on veterans' characteristics.

Earlier comparisons of VA and non-VA costs of care also underscore the need for a standard methodology to measure outputs of VA and non-VA research and educational programs and to account for capital costs in both types of institutions. Both of those data needs could be addressed through a standardized cost accounting system. Analyses that test the sensitivity of conclusions to the methods of estimating capital costs in particular can give researchers and managers more confidence in the robustness of their conclusions.

This short list of new directions to meet VA's current policy needs has implications both for VA infrastructure and the priorities facing health services researchers. In addition, a partnership of researchers with physicians and managers is needed to demonstrate that programs and changes in VA practice can be effectively evaluated.

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